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$$S_1=S_2=0, \quad S_3=-3p, \quad S_4=-4q, \quad S_5=-5r.$$

$$\text{Hence, } A = -\sqrt[6]{\frac{q^2}{5p}}, \quad B = \sqrt[6]{\frac{p^3}{25q}}, \quad r = \frac{q^2}{5p} - \frac{p^3}{25q}.$$

276. Proposed by W. J. GREENSTREET, M. A., Editor of *The Mathematical Gazette*, Stroud, England.

If x_1, x_2, \dots, x_n be unequal, and $f(x)$ be a rational integral function of degree $\geq n-2$, then shall

$$\sum_{r=1}^{r=n-1} \frac{f(x_r)}{(x_r-x_1)(x_r-x_2)\dots(x_r-x_n)} = 0.$$

Solution by the PROPOSER.

The left hand side written at length is

$$\begin{aligned} & \frac{f(x_1)}{(x_1-x_2)(x_1-x_3)\dots(x_1-x_n)} + \frac{f(x_2)}{(x_2-x_1)(x_2-x_3)\dots(x_2-x_n)} + \dots \\ & \qquad \qquad \qquad + \frac{f(x_n)}{(x_n-x_1)(x_n-x_2)\dots(x_n-x_{n-1})}. \end{aligned}$$

$$\text{Let } \frac{f(x)}{(x-x_1)(x-x_2)\dots(x-x_n)} \equiv \frac{A_1}{x-x_1} + \frac{A_2}{x-x_2} + \dots + \frac{A_n}{x-x_n}.$$

Then $A_1, A_2, A_3, \dots, A_n$

$$\begin{aligned} &= \frac{f(x_1)}{(x_1-x_2)(x_1-x_3)\dots(x_1-x_n)}, \quad \frac{f(x_2)}{(x_2-x_1)(x_2-x_3)\dots(x_2-x_n)}, \quad \dots, \\ & \qquad \qquad \qquad \frac{f(x_n)}{(x_n-x_1)(x_n-x_2)\dots(x_n-x_{n-1})}. \end{aligned}$$

Hence, $f(x) \equiv \sum A_1(x-x_2)(x-x_3)\dots(x-x_n)$ = polynomial of degree $\geq n-2$.

Hence, $\sum A_1 = 0$.

This problem, as we thought, proves to be similar to Ex. 4, p. 319, 3rd Edition of Burnside and Panton's *Theory of Equations*. ED. F.

GEOMETRY.

311. Proposed by J. OWEN MAHONEY, B. E., M. Sc., Dallas High School, Dallas, Texas.

Triangle ABC is obtuse-angled at C ; x, y, z are squares on the sides AC, CB, BA ; LH and MJ are lines joining adjacent sides of x, z and y, z . The common chord of the circles on LH and MJ as diameters passes through C and the mid-point of HJ .